

DUST SENTRY

Near reference real-time particle monitor for specific dust fractions

Designed for those who need to monitor and manage specific outdoor dust and particulate emissions continuously and in real-time.

The Dust Sentry is a nephelometer-based instrument that delivers defensible and accurate mass measurement for PM₁₀, PM_{2.5}, PM₁, or TSP.

MCERTS certified and SCAQMD Rule 1466 pre-approved.



What is it?

- A weather-proof nephelometer-based monitor with integrated solar shielding for outdoor monitoring of dust and particulates.
- A modular and configurable monitoring platform for measuring specific dust and particulate sizes, with the option to integrate wind, noise, and weather sensors.
- A flexible communication platform that transfers real-time data wirelessly.
- A web interface accessed via browser that lets you view all your data and set email / sms alerts on parameters of concern.

What can it measure?

PM₁₀ or PM_{2.5}, PM₁, or TSP, depending on the nephelometer selected. Nephelometers are dedicated to a single size of particulate.

Who is it for?

Industrial operators who need a cost effective and robust solution to manage and control dust and particulates from activities at:

- Construction and remediation sites
- Quarry and mine sites
- Port and bulk-handling terminals
- Waste management sites

Environmental consultants who need defensible measurements for their clients.

Regulatory authorities who require deployable, rapid response incident monitoring

Environmental health & safety managers who must demonstrate that they are providing a safe work environment.

Researchers who need an affordable means to collect accurate, scientifically robust data.

| Particle Module | Sizes | Range | Accuracy | Resolution | Lower Detectable Limit (2σ) |
|-----------------|---|-------------------------------|---|-----------------------|-----------------------------|
| Nephelometer | PM ₁ PM _{2.5} PM ₁₀ or TSP | 0 to 60,000 µg/m ³ | <±(2 µg/m ³ + 5% of reading) | 0.1 µg/m ³ | < 1 µg/m ³ |

| System Specifications | |
|--|---|
| Control System | Embedded fanless PC, Intel Atom N2600 @ 1.6 Gz, 2 GB RAM, 32 GB SSD, Ubuntu Linux OS |
| Communications | WiFi, Ethernet (LAN) standard. Cellular IP HSPA 4G modem optional. |
| Software | Connect: Runs on embedded PC and accessed via web browser. Cloud: Runs on secure cloud servers, access via web browser. Features: Remote configuration, diagnostics, journal, calibration, and data acquisition. Optional features: SMS and email alerts, auto data export via email or FTP. |
| Datalogging | 32 GB solid state hard drive with capacity for > 5 years data storage. |
| Outputs | Optional 2 x relays or 4 x 4-20mA. |
| Averaging Period | 1, 5, 10, 15, 20, 30 minutes, 1, 2, 4, 8, 12, 24 hours. |
| Power Requirements (heater on/off) | 100-260 VAC @ 21 W / 30W. Regulated 12 VDC @ 21W / 30W. |
| Enclosure | Lockable IP65 GRP cabinet with integrated aluminum solar shield. |
| PM Sampling System | Inlet: Omni-directional 14.1 inch heated inlet with sharp cut cyclone for selected particle size. Pump: 12V brushless DC diaphragm pump. Optics: 670 nm laser, near-forward scattering nephelometer with sheath air protection. |
| Dimensions H, W, D | 19 x 13 x 7.4 inch, including solar shield and mounting bracket. |
| Weight | 28.6 lb. |
| Environmental Operating Range | 14 to 122 °F (-10 to +50 °C). |
| Mounting method | Pole, tripod, wall mounting brackets included. |
| 47mm Sample Filter (Optional) | 47 mm filter for particle loading analysis. |
| Factory Integrated & tested Sensors (optional) | Gill WindSonic(ultrasonic wind sensor), Vaisala WXT536 (weather transmitter), Met One MSO (weather transmitter, Cirrus MK427 Class 1 (noise sensor), Novalynk Pyranometer (solar radiation). |

Aeroqual products are designed, manufactured, and patented by Aeroqual Limited, 460 Rosebank Road, Avondale, Auckland 1026, New Zealand